

## Guppy Breeding Methods

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Breeding Guppies can be exceptionally rewarding, however be warned if you are trying to achieve a specific goal such as a solid colour fish i.e. all Black Fish, this can be very difficult but immensely rewarding.

However, there are a couple of pointers that will help, these are as follows:

### · Learn your strain.

Every strain of Guppies is unique, if you wish to succeed you will need to know and understand the characteristics of your chosen strain, if you are lucky the person who you acquired your fish from will already know the genetic make-up of the strain. If not, then you can do this by close observation and through the keeping of breeding logs. It is important to note in these logs all the characteristics of the fish that you choose as breeding stock including colour i.e. does the colour have a uniform look or is it more intense in certain areas, fin shapes, dorsal, caudal, find out what the ideal shape should be and then aim to achieve this, colour in the fins, again is the colour solid or are other shades present, these often show up as the fish turns and the light catches the fins and body. Also talk to fellow Guppy enthusiasts, as these are always a good source of useful information.

Find out if your strain carries the desired traits that you want on the X-chromosome or the Y-chromosome as this will save time carrying out needless experiments. The Internet can be very useful when you are trying to trace down genetic make-up of your fish.

### · Choose a Goal.

If you choose a particular goal that you want to achieve i.e. a Solid Black fish, then it is much easier to organise your tank space and easy to select the fish that you intend to keep out of each litter, as you will be looking for specific traits i.e. as much black in the body or a particular dorsal or caudal shape. Always back up your breeders, never keep just one pair as accidents and disease do happen no matter how careful you are and if you have been working on a particular strain for a number of years, you do not want to put all that hard work in jeopardy by losing just two fish. I would advise at least two trios in separate tanks, three if you have the room.

### Keeping Records

I have tried keeping records on my computer and still do but this is used as a backup to my written Breeding Log; in this log I have the following headings:

- **Identity** - Each and every breeding pair or trio has an identity number, your first pair would be given number 1 your second number 2 and so on. This allows you

To trace the lineage of your fish and any crosses that have been made.

- **Sex of the fish** - A simple M or F to denote male or female.
- **Colour/Strain** - i.e. half black red delta or yellow snakeskin
- **Generation** - Start with P for parentage followed by F1, F2 etc.
- **Cross** - Are the fish been bred brother to sister (Siblings) or father or mother to daughter or son (backcross) or to a genetically related strain (outcross)
- **Parents** - What was the ID number of the parent fish i.e. ID number 8
- **Date Born** - Date litter was dropped, very useful to work out age of fish for breeding and to track their progress for finage and colour development some fish develop their colour traits when they get to two months some earlier so the litter that looks like all females at one month could be all male at 3 months.
- **Breeders produced** - Did these fish produce any litters that had worthwhile fish that you have earmarked as breeders?
- **Notes** - Allow plenty of room here as hopefully you will be writing down plenty of observations about when the fish started to sex out, what sex ratio of males to females were produced, growth rate colour, patterns etc.

Always mark the tank with the breeding number of the fish that are in it and the date that the litter was born if the tank holds fry as well as which breeder ID they belong to as if you do not you will soon lose track. A simple strip of masking tape will suffice as you can easily remove this and attach it to the fish's new tank if you move them.

### Culling

Guppies are prolific breeders and one of the jobs you will have to carry out is culling, without carrying out any culling you would quickly run out of space.

Culling Guppies is like being a judge at a show you are looking at the fish with a set of standards that you are judging against (your ideal fish) and disregarding any fish that do not reach this standard, the idea been that you will end up with either one or two trios of fish that are better than the parents.

It is better to put all your hard work and expensive food into the best fish than to have a number of average fish, have a word with your local aquarist shop to see if they will take your cull fish, they may not give you a lot for them but whatever you get will help with the running costs of your hobby.

### Line Breeding

The problem with successive inbreeding methods is that each generation loses a little bit of genetic diversity.

Line Breeding was developed to help overcome this problem and is the most simplistic way to keep a strain true.

### Out-Crossing

This involves mating two unrelated guppies. It is the opposite too inbreeding or line breeding.

Whilst the aim of inbreeding is to reduce the variations of your offspring and the use of line breeding is to keep your gene pool intact, out-crossing would only normally be done to correct or add a gene to your strain, this may be a bigger dorsal or improve the colour or perhaps correct a defect in the caudal fin, or perhaps you want to create a totally new strain of guppy.

Most guppy breeders tend to use the out-crossing method when they are trying to fix a problem with their own strain; this may be a decrease in size or vigour or as mentioned above to improve finage or colour.

Out-crossing is best not attempted by a novice guppy keeper as if you get it wrong you could lose the strain traits altogether.

The most important thing to find out before you attempt to out-cross your guppies is that they are compatible strains, some colour strains mix and some do not, crossing a variegated snakeskin with a half black red gives you one very mixed up guppy. This is why it is so important to try and find out what the genetic make-up of your guppies is.

You can still go ahead and carry out an out-cross, but be warned you will have to have a lot of tank space available and patience to carry out the required backcrosses to end up with the fish that you started out looking for, however this can be very rewarding and may throw up the odd surprise during the process.

### Backcrossing

This is where you breed say the male of the strain that you were trying to fix a problem in (i.e. a small dorsal) back to one of his daughters from the outcross or the female of the strain back to her son from the outcross. The aim is to try and restore the strain back to its original format but with the trait fixed that you carried out the out-cross for in the first place, you may have to perform this a few times or you may be lucky first time. The way to check is if the sibling-to-sibling mating produces replicas of the parents with the trait fixed.

### Out-Crossing Tips

- Always use-established strains whose genetics are stable i.e. the offspring all look identical.
- Always choose healthy vigorous fish from your chosen strain

- Reduce the factors i.e. use a red strain to a red strain and not a red with a blue, whilst this may work it may take a number of backcrosses to establish the strain again.

- Always keep the original strains going and pure.

- Try the cross both ways i.e. female to outcross strain and male to outcross strain, as you may not know whether the trait you are looking for is X or Y linked.

The method is still inbreeding but is corrected every few generations by crossing with a related line.

The most common method is to break your strain into two separate lines, use the inbreeding method to maintain these lines for a number of generations i.e. brother to sister and then

Cross the lines after say three generations creating two new lines from the crosses. This is repeated on an ongoing basis.

Hopefully the explanation below will make this a little clearer.

Line 1	Line 2
P1---- M---- F	P1---- M---- F
F1---- M---- F	F1---- M---- F
F2---- M---- F	F2---- M---- F

Cross line 1 F2 female with line 2 F2 male & line 2 F2 female with line 1 F2 male.

Line 1	Line 2
P1---- M---- F	P1---- M---- F
F1---- M---- F	F1---- M---- F
F2---- M---- F	F2---- M---- F

Cross line 1 F2 female with line 2 F2 male & line 2 F2 female with line 1 F2 male.

Line 1	Line 2
P1---- M---- F	P1---- M---- F
F1---- M---- F	F1---- M---- F
F2---- M---- F	F2---- M---- F

Cross line 1 F2 female with line 2 F2 male & line 2 F2 female with line 1 F2 male, this process is repeated over & over.

As the Guppies are typically 4 months old before you would put the breeder Females and Males together the above process takes about 12 months before you carry out your first cross. Using this simple method you can maintain good healthy Guppies over many years. But remember to keep your records up to date.

The more lines that you run the more diversified your gene pool will be, if you can start with two or more lines that are not related then so much the better.

Line breeding is the most basic and easy to follow breeding method.

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To submit your questions and comments on the article direct to the author email:  
[derek.jordan@sjpp.co.uk](mailto:derek.jordan@sjpp.co.uk)